

M.Sc Sem.-2 Examination

P - 409 - Microbiology

Time : 2-00 Hours]

June 2022

[Max. Marks : 50

Instructions: All questions in **Section I** carry equal marks
 Attempt any **THREE** questions in **Section I**
Question IX in **Section II** is compulsory

Section I (42 marks)

Q I	(a) Write a detailed note on carbon nanotubes.	7
	(b) Give an overview of applications of nanotechnology in the field of medicine.	7
Q II	(a) Write a note on historical development Nanotechnology.	7
	(b) What are unique properties of nanomaterials and how are they used?	7
Q III	(a) Give details on principle, applications and limitations of GLC	7
	(b) Write about principle working and applications of HPLC.	7
Q IV	(a) Explain FTIR in detail	7
	(b) Write a note on detection of signals by NMR technique	7
Q V	(a) Write a note on biological databases.	7
	(b) List out domains of bioinformatics and provide information on various computer hardware used for Bioinformatics	7
Q VI	(a) Explain GenBank, UniProt and PDB with their key features.	7
	(b) Explain Rational drug design with suitable example.	7
Q VII	(a) Write a note on BLAST.	7
	(b) Write a note on FASTA.	7
Q VIII	(a) Explain PSA and provide insights on Local Sequence alignment with its advantages and disadvantages.	7
	(b) Explain Global sequence alignment in details and list out various tools available for MSA.	7

Section II (8 marks)

Q IX	Short Questions (One mark each)	
	1. What is Scanning Tunnelling Microscopy?	1
	2. What is principle of Dynamic Light scattering technique.	1
	3. What happens when a molecule absorbs infrared radiation?	1
	4. Define quadrupole.	1
	5. What is UniProt and what kind of data is available at UniProt?	1
	6. What is NCBI?	1
	7. What is FASTA file format?	1
	8. What is meant by the term 'sequence alignment'?	1